



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/597,049	07/10/2006	Chrystel Cambus-Brunet	21.1214	5254

27452 7590 07/02/2007
SCHLUMBERGER TECHNOLOGY CORPORATION
David Cate
IP DEPT., WELL STIMULATION
110 SCHLUMBERGER DRIVE, MD1
SUGAR LAND, TX 77478

EXAMINER

DITRANI, ANGELA M

ART UNIT	PAPER NUMBER
----------	--------------

3676

NOTIFICATION DATE	DELIVERY MODE
-------------------	---------------

07/02/2007

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ssitzmann@sugar-land.oilfield.slb.com
pmohan@sugar-land.oilfield.slb.com

Office Action Summary	Application No. 10/597,049	Applicant(s) CAMBUS-BRUNET ET AL.	
	Examiner Angela M. DiTrani	Art Unit 3676	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-7,10,11,13-16,18 and 20 is/are rejected.
- 7) ☒ Claim(s) 8,9,12,17,19,21 and 22 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 July 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>07/10/06</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: Figures 6a – 6d are disclosed to show one example of a core after treatment in [0035]. However, no further description using the designation of “Figure 6a”, “6b”, “6c”, or “6d” is provided; the present description of the drawings is distinguished as “Top,” “Middle,” and “Bottom.” Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

2. New corrected drawings in compliance with 37 CFR 1.121(d) are required in this application because in Figures 6a-6d, it is difficult to distinguish the difference in what is disclosed as “consolidated” material and “wetted particles sand”. The photos of record appear to contain sections of dark gray and sections of black. Applicant is advised to

Art Unit: 3676

employ the services of a competent patent draftsman outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

Specification

3. The disclosure is objected to because of the following informalities:

In [0010], line 1, "of" should be deleted from the phrase "drilling of in" to correct the grammatical informality.

In [0016], line 7, the temperature range at which the activator reacts is disclosed as 15–4°C. Revision to - 4-15°C – is suggested.

In [0035], line 1, "easily" should be replaced with – easy - to correct the grammatical informality.

In [0038], line 4, "progress" should be replaced with – progresses - to correct the grammatical informality.

In [0038], line 6, the closure of the parentheses in the % gel strength formula is missing. Revision of the formula to include the closing parentheses -) – is advised.

Appropriate correction is required.

Claim Objections

4. Claims 1-22 are objected to because of the following informalities:

In claim 1, line 3 – a – should be added between "comprising cross-linkable."

Since claims 2-22 are dependent upon claim 1, they are thereby objected to as well.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 16 and 20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

7. Claims 16 and 20 each recite the limitation "**the** zone of interest" in line 2. There is insufficient antecedent basis for this limitation in each of these claims.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1-7, 13-15 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Mumallah et al. (US 4799548).

With respect to claim 1, Mumallah et al. discloses a method of stabilizing an underground formation surrounding a borehole (see col. 1, 50-58; col. 2, line 53 – col. 3, line 2) comprising placing a treatment fluid in a formation (see col. 1, line 59 – col. 2, line 15), the treatment fluid comprising a cross-linkable polymer (see col. 6, lines 26-48) and a cross-linking agent (see col. 3, line 3 – col. 5, line 54), allowing the treatment fluid to gel in-situ (see col. 7, lines 34-54), and pumping, after placement of the treatment

fluid in the formation, an activator fluid into the well to accelerate the crosslinking of the polymer and the development of the gel strength (see col. 2, lines 7-14 and 62-65; col. 7, line 54 – col. 8, line 2).

With respect to depending claim 2, although not explicitly stated, since steam is injected in order to activate the high temperature crosslinker, one would anticipate that the reaction between the activator and the treatment fluid of Mumallah, steam and water-dispersible polymer/crosslinker composition, respectively, would be not be exothermic, since it is necessary to provide heat in order to activate the high temperature crosslinker.

With respect depending claims 3-5, the reference teaches the method wherein the cross-linkable polymer is a polymer containing acrylamide functional groups, wherein the polymer comprises polyacrylamide, partially hydrolysed polyacrylamide or copolymers of acrylamides and acrylates (see col. 6, lines 26-48). With respect to claim 5, the reference teaches the method wherein the polymer is a partially hydrolysed polyacrylamide with a molecular weight of about 500,000 (see col. 6, line 64 – col. 7, line 2).

With respect to depending claims 6 and 7, the reference teaches the cross-linking agent as a molecule or complex containing a reactive transition metal cation (see col. 3, line 65 – col. 4, line 25; col. 5, lines 3-42); and wherein the cross-linking agent is a zirconium lactate solution (see col. 4, lines 4-16), insofar as the lactate is a known α -hydroxy carboxylate.

With respect to depending claims 13-15, the reference teaches the method whereby the treatment fluid and the activator are sequentially placed into the well through a drill string (see col. 7, line 34 – col. 8, line 2); wherein the sequence is repeated (see col. 8, lines 3-11); and wherein the treatment fluid and activator are separated from each other by spacer fluids (see col. 8, lines 14-19).

With respect to depending claim 18, the reference teaches the bottomhole temperature range as claimed (see col. 7, lines 34-37).

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

12. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mumallah et al. in view of Parris et al. (US 6011075).

Mumallah et al. discloses the method as stated above. However, the reference fails to teach the method wherein either the activator or the treatment fluid or both comprises colloidal silica.

Parris et al. teaches a composition comprising an aqueous liquid comprising a water soluble cross-linkable forming gel such as acrylamide (see col. 5, lines 1-5) and a cross-linking agent comprising an inorganic material, such as zirconium lactate (see col. 5, lines 36-49), and a colloidal silica for the purpose of increasing the gel strength of the gel and assure both gel stability within the reservoir as well as suitable time allotment for composition injection (see col. 2, line 51 – col. 4, line 43).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to include colloidal silica within the treatment fluid of Mumallah et al. in order to strengthen the cross-linkable gel, and, thereby better stabilize the formation.

13. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mumallah et al..

Mumallah et al. discloses the method as stated above. However, the reference fails to explicitly teach the method wherein the treatment fluid has a viscosity of up to 300 cp.

Mumallah teaches varying the concentration of the water-soluble polymer within the treatment fluid for the purpose of taking the molecular weight of the employed cross-linkable polymer into account insofar because, the higher the molecular weight of the polymer, the higher the viscosity of the resulting gel (see col. 7, lines 3-10).

Therefore, it would have been an obvious matter of choice or design to one having ordinary skill in the art at the time the invention was made to employ a treatment fluid with a particular viscosity by adjusting the concentration of the polymer within the treatment fluid composition, in order to obtain the desired treatment fluid viscosity most suitable to meet the stabilization needs of the actual subterranean formation encountered in the field.

Allowable Subject Matter

14. Claims 8, 9, 12, 17, 19, 21, and 22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: http://en.wikipedia.org/wiki/Lactic_acid discloses the α -hydroxy carboxylate nature of lactate; US 6814145 discloses the use of a single crosslinking agent/activator selected from the group consisting of an admixture of zirconium IV ions, acetates, and mixtures thereof.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Angela M. DiTrani whose telephone number is (571) 272-2182. The examiner can normally be reached on M-F, 6:30AM-4:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Glessner can be reached on (571) 272-6843. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 3676

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AD *AD*
06/21/07

A handwritten signature in black ink, appearing to read "Brian E. Glessner", followed by a long horizontal line extending to the right.

BRIAN E. GLESSNER
SUPERVISORY PATENT EXAMINER